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EXAMINER	
BLEVINS, JERRY M	

ART UNIT	PAPER NUMBER
2883	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/753,091	ARKHIPOV ET AL.
	Examiner	Art Unit
	Jerry Martin Blevins	2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,5,7-17,19,20 and 22-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5,7,10-17,19,20,22-41 and 44-52* is/are rejected.

7)☒ Claim(s) *8,9,42 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/21/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Brian Healy
Primary Examiner

DETAILED ACTION

Response to Amendment

Examiner accepts amendments to claims 9, 11, 16, and 22. Examiner withdraws the prior objection to the above claims.

Response to Arguments

Applicant's arguments with respect to claims 1, 2, 4, 5, 7, 10-17, 19, 20, and 22-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 5, 10-12, 14-17, 19, 20, 23-27, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent to Duggal et al, number 6,538,375 in view of US Patent to Desurvire et al, number 5,892,876 and further in view of US Patent to Lester, number 6,091,085.

Regarding claim 1 and 27, Duggal teaches an optic device comprising a plurality of layers (Figures 3, 4), the optical device comprising an optical fiber (Figures 3,4, fiber light source 21) having a substantially axial symmetry (Figures 3,4), the optical fiber

comprising a transparent envelope (elements 26, 28, and 29, with element 28 transparent, column 6, line 29) surrounding a core (22); and a light source (21) comprising an inner electrode layer (28), a reflective outer electrode layer (element 27 and column 13, line 28), and an active area layer (23) located between the inner electrode and the outer electrode, wherein the light source and the optical fiber are integrated (as fiber light source 21), and wherein the light source has an axial symmetry and is positioned coaxially with respect to the axis of the optical fiber (Figures 3,4), and wherein the inner electrode comprises a transparent material (column 6, line 29) to permit light generated in the active area to propagate outside the light source and into the optical fiber. Duggal does not teach that the core is doped with phosphorescent or fluorescent material. Duggal also does not teach that the transparent envelope comprises a cladding layer. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to dope the core of Duggal with a fluorescent material, as taught by Desurvire. The motivation would have been to obtain a desired output signal, such as an optical oscillator or an optical amplifier (Desurvire, column 1, lines 7-11). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to surround the core of Duggal with the cladding of Desurvire. The motivation would have been to protect the core and to prevent leakage of light from the core. Duggal also does not teach that at least one of the layers has imperfections created by roughening the layer. Lester teaches an optical device

comprising a plurality of layers, wherein at least one of the layers has imperfections created by roughening the layer (column 3, lines 54-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Duggal such that at least one of the layers has imperfections, as taught by Lester. The motivation would have been to improve light coupling efficiency (Lester, column 3, lines 54-64).

Regarding claim 2, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal also teaches that the envelope further comprises a jacket layer (Figures 3,4, element 26).

Regarding claim 4, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal also teaches that the light source is flexible (column 4, lines 27,28).

Regarding claim 5, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal also teaches that the light source comprises a mono or multi-layer organic light-emitting diode (OLED) (column 3, line 36).

Regarding claim 10, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal does not teach that the device is configured to generate optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate optical signals (column 1, line 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Duggal in view of Desurvire

and further in view of Lester to generate optical signals, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 11, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 10. Desurvire also teaches that the optical signal is substantially constant (for a given core radius) (column 3, line 67, column 4, line 1).

Regarding claim 12, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal does not teach that the device is configured to amplify or repeat optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to amplify optical signals (column 1, lines 10,11). It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Duggal in view of Desurvire and further in view of Lester to amplify optical signals, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 14, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal also teaches that the device is configured for introspection (column 12, lines 35-49, Figure 14).

Regarding claim 15, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal also teaches that the device is configured for endoscopy (column 12, lines 35-49, Figure 14).

Regarding claim 16 and 51, Duggal teaches a method of making an optical device, the method comprising forming an optical fiber having a substantially axial symmetry (Figures 3,4, fiber light source 21); surrounding a fiber core (22) of the optical fiber with a transparent envelope (elements 26, 28, and 29, with element 28 transparent, column 6, line 29); integrating a light source (21) with the optical fiber, the light source comprising an inner electrode layer (28), a reflective outer electrode layer (element 27 and column 13, line 28), and an active area layer (23) located between the inner electrode and the outer electrode; and positioning the light source coaxially with respect to the axis of the optical fiber (Figures 3,4), wherein the inner electrode comprises a transparent material (column 6, line 29) to permit light generated in the active area to propagate outside the light source and into the optical fiber. Duggal does not teach that the core is doped with phosphorescent or fluorescent material. Duggal also does not teach that the transparent envelope comprises a cladding layer. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to dope the core of Duggal with a fluorescent material, as taught by Desurvire. The motivation would have been to obtain a desired output signal, such as an optical oscillator or an optical amplifier (Desurvire, column 1, lines 7-11). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to surround the core of Duggal with the cladding of Desurvire. The motivation would have been to protect the core and to prevent leakage of light from the

core. Duggal also does not teach that at least one of the layers has imperfections created by roughening the layer. Lester teaches an optical device comprising a plurality of layers, wherein at least one of the layers has imperfections created by roughening the layer (column 3, lines 54-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Duggal such that at least one of the layers has imperfections, as taught by Lester. The motivation would have been to improve light coupling efficiency (Lester, column 3, lines 54-64).

Regarding claim 17, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal also teaches that the envelope further comprises a jacket layer (Figures 3,4, element 26).

Regarding claim 19, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal also teaches that the light source is flexible (column 4, lines 27,28).

Regarding claim 20, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal also teaches that the light source comprises a mono or multi-layer organic light-emitting diode (OLED) (column 3, line 36).

Regarding claim 23, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal does not teach that the method further comprises generating optical signals from the light source. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate optical signals from a light source (column 1, line 10). It

would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating optical signals from the light source, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 24, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal does not teach that the method further comprises generating substantially constant optical signals from the light source. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate substantially constant (for a given core radius) optical signals from a light source (column 1, line 10, column 3, line 67, column 4, line 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating substantially constant optical signals from the light source, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 25, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal does not teach that the method further comprises performing at least one of amplification and repeating of optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1,

line 15, and column 3, line 38) configured to amplify optical signals (column 1, lines 10,11). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of amplification of optical signals, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 26, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal does not teach that the method comprises generating a laser light signal through the optical fiber. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) adapted to be used in optical fiber lasers (column 1, lines 5,6). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating a laser light signal through the optical fiber, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Claims 7, 13, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duggal in view of Desurvire and further in view of Lester as applied to claims 1 and 16 above, and further in view of US Patent to Dejneka, number 6,324,326.

Regarding claim 7, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal does not teach at least one mirror on each side of an optically pumped region of the optical fiber, wherein one mirror is substantially opaque and the another mirror is at least partially reflective. Dejneka

teaches a fiber laser (Figure 2, element 30) comprising one mirror (60,62) on each side of an optically pumped region (Figure 2 and column 6, lines 37-53), wherein one mirror is substantially opaque (highly reflective mirror 60, column 6, lines 41-43) and the another mirror is at least partially transparent (partially transmissive mirror 62, column 6, lines 44,45). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the cavity comprising two mirrors, as taught by Dejneka, in the device of Duggal in view of Desurvire and further in view of Lester. The motivation would have been to obtain a desired output signal (Desurvire, column 1, lines 7-11).

Regarding claim 13, Duggal in view of Desurvire and further in view of Lester, and further in view of Dejneka, teaches the limitations of the base claim 7. Duggal does not teach that the device is configured as a laser generator. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured as a laser generator (column 1, lines 5,6). It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Duggal in view of Desurvire and further in view of Lester, and further in view of Dejneka, as a laser generator, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 22, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 16. Duggal does not teach positioning at least one mirror on each side of an optically pumped region of the optical cable, wherein one mirror is substantially opaque and the another mirror is at least partially reflective.

Dejneka teaches a fiber laser (Figure 2, element 30) comprising one mirror (60,62) on each side of an optically pumped region (Figure 2 and column 6, lines 37-53), wherein one mirror is substantially opaque (highly reflective mirror 60, column 6, lines 41-43) and the another mirror is at least partially transparent (partially transmissive mirror 62, column 6, lines 44,45). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the positioning of a cavity comprising two mirrors, as taught by Dejneka, in the method of Duggal in view of Desurvire and further in view of Lester. The motivation would have been to obtain a desired output signal (Desurvire, column 1, lines 7-11).

Claims 28-31, 33-40, 44-46, 48-50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duggal in view of Desurvire and further in view of Lester, and further in view of US Pre Grant Publication to Inditsky, number 2003/0016930, and US Patent to Bulovic et al, number 6,297,495.

Regarding claim 37 and 50, Duggal teaches an optic device comprising a plurality of layers (Figures 3, 4), the optical device comprising an optical fiber (Figures 3,4, fiber light source 21) having a substantially axial symmetry (Figures 3,4), the optical fiber comprising a transparent envelope (elements 26, 28, and 29, with element 28 transparent, column 6, line 29) surrounding a core (22); and a light source (21) comprising an inner electrode layer (28), an outer electrode layer (element 27 and column 13, line 28), and an active area layer (23) located between the inner electrode and the outer electrode, wherein the light source and the optical fiber are integrated (as fiber light source 21), and wherein the light source has an axial symmetry and is

positioned coaxially with respect to the axis of the optical fiber (Figures 3,4), and wherein the inner electrode comprises a transparent material (column 6, line 29) to permit light generated in the active area to propagate outside the light source and into the optical fiber. Duggal does not teach that the core is doped with phosphorescent or fluorescent material. Duggal also does not teach that the transparent envelope comprises a cladding layer. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to dope the core of Duggal with a fluorescent material, as taught by Desurvire. The motivation would have been to obtain a desired output signal, such as an optical oscillator or an optical amplifier (Desurvire, column 1, lines 7-11). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to surround the core of Duggal with the cladding of Desurvire. The motivation would have been to protect the core and to prevent leakage of light from the core. Duggal also does not teach that at least one of the layers has imperfections created by roughening the layer. Lester teaches an optical device comprising a plurality of layers, wherein at least one of the layers has imperfections created by roughening the layer (column 3, lines 54-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Duggal such that at least one of the layers has imperfections, as taught by Lester. The motivation would have been to improve light coupling efficiency (Lester, column 3, lines 54-64). Duggal also does not teach that the outer electrode (cathode 27) comprises transparent

material and a reflective layer on top of the outer electrode. Inditsky teaches a light source (light guiding rod, LGR) with reflective cladding (page 14, paragraph 179). It would have been obvious to one of ordinary skill in the art to include the reflective outer layer of Inditsky in the device of Duggal. The motivation would have been to prevent absorption of external light. Bulovic teaches an optic device (column 10, line 17) comprising a pair of transparent electrodes, namely a transparent cathode and a transparent anode (column 10, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to make the outer electrode (cathode) of Duggal out of transparent material, as taught by Bulovic. The motivation would have been to allow easy passage of light from the light source into the fiber.

Regarding claim 38, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal also teaches that the envelope further comprises a jacket layer (Figures 3,4, element 26).

Regarding claim 39, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal also teaches that the light source is flexible (column 4, lines 27,28).

Regarding claim 40, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal also teaches that the light source comprises a mono or multi-layer organic light-emitting diode (OLED) (column 3, line 36).

Regarding claim 44, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal does not teach that the device is configured to generate optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate optical signals (column 1, line 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, to generate optical signals, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 45, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 44. Desurvire also teaches that the optical signal is substantially constant (for a given core radius) (column 3, line 67, column 4, line 1).

Regarding claim 46, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal does not teach that the device is configured to amplify or repeat optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to amplify optical signals (column 1, lines 10,11). It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Duggal in view of Desurvire and further in view of Lester,

further in view of Inditsky and Bulovic, to amplify optical signals, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 48, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal also teaches that the device is configured for introspection (column 12, lines 35-49, Figure 14).

Regarding claim 49, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal also teaches that the device is configured for endoscopy (column 12, lines 35-49, Figure 14).

Regarding claim 28 and 52, Duggal teaches a method of making an optical device, the method comprising forming an optical fiber having a substantially axial symmetry (Figures 3,4, fiber light source 21); surrounding a fiber core (22) of the optical fiber with a transparent envelope (elements 26, 28, and 29, with element 28 transparent, column 6, line 29); integrating a light source (21) with the optical fiber, the light source comprising an inner electrode layer (28), an outer electrode layer (element 27 and column 13, line 28), and an active area layer (23) located between the inner electrode and the outer electrode; and positioning the light source coaxially with respect to the axis of the optical fiber (Figures 3,4), wherein the inner electrode comprises a transparent material (column 6, line 29) to permit light generated in the active area to propagate outside the light source and into the optical fiber. Duggal does not teach that

the core is doped with phosphorescent or fluorescent material. Duggal also does not teach that the transparent envelope comprises a cladding layer. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to dope the core of Duggal with a fluorescent material, as taught by Desurvire. The motivation would have been to obtain a desired output signal, such as an optical oscillator or an optical amplifier (Desurvire, column 1, lines 7-11). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to surround the core of Duggal with the cladding of Desurvire. The motivation would have been to protect the core and to prevent leakage of light from the core. Duggal also does not teach that at least one of the layers has imperfections created by roughening the layer. Lester teaches an optical device comprising a plurality of layers, wherein at least one of the layers has imperfections created by roughening the layer (column 3, lines 54-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Duggal such that at least one of the layers has imperfections, as taught by Lester. The motivation would have been to improve light coupling efficiency (Lester, column 3, lines 54-64).). Duggal also does not teach that the outer electrode (cathode 27) comprises transparent material and a reflective layer on top of the outer electrode. Inditsky teaches a light source (light guiding rod, LGR) with reflective cladding (page 14, paragraph 179). It would have been obvious to one of ordinary skill in the art to include the reflective outer layer of Inditsky in the device of Duggal. The

motivation would have been to prevent absorption of external light. Bulovic teaches an optic device (column 10, line 17) comprising a pair of transparent electrodes, namely a transparent cathode and a transparent anode (column 10, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to make the outer electrode (cathode) of Duggal out of transparent material, as taught by Bulovic. The motivation would have been to allow easy passage of light from the light source into the fiber.

Regarding claim 29, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28. Duggal also teaches that the envelope further comprises a jacket layer (Figures 3,4, element 26).

Regarding claim 30, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28. Duggal also teaches that the light source is flexible (column 4, lines 27,28).

Regarding claim 31, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28. Duggal also teaches that the light source comprises a mono or multi-layer organic light-emitting diode (OLED) (column 3, line 36).

Regarding claim 33, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28. Duggal does not teach that the method further comprises generating optical signals from the light source. Desurvire teaches an optical fiber (Figure 1, element 1)

comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate optical signals from a light source (column 1, line 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating optical signals from the light source, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 34, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28. Duggal does not teach that the method further comprises generating substantially constant optical signals from the light source. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate substantially constant (for a given core radius) optical signals from a light source (column 1, line 10, column 3, line 67, column 4, line 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating substantially constant optical signals from the light source, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 35, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28.

Duggal does not teach that the method further comprises performing at least one of amplification and repeating of optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to amplify optical signals (column 1, lines 10,11). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of amplification of optical signals, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 36, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28. Duggal does not teach that the method comprises generating a laser light signal through the optical fiber. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) adapted to be used in optical fiber lasers (column 1, lines 5,6). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating a laser light signal through the optical fiber, as taught by Desurvire, into the method of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Claims 32, 41, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duggal in view of Desurvire and further in view of Lester, further in

view of Inditsky and Bulovic, as applied to claims 28 and 37 above, and further in view of Dejneka.

Regarding claim 41, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal does not teach at least one mirror on each side of an optically pumped region of the optical fiber, wherein one mirror is substantially opaque and the another mirror is at least partially reflective. Dejneka teaches a fiber laser (Figure 2, element 30) comprising one mirror (60,62) on each side of an optically pumped region (Figure 2 and column 6, lines 37-53), wherein one mirror is substantially opaque (highly reflective mirror 60, column 6, lines 41-43) and the another mirror is at least partially transparent (partially transmissive mirror 62, column 6, lines 44,45). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the cavity comprising two mirrors, as taught by Dejneka, in the device of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic. The motivation would have been to obtain a desired output signal (Desurvire, column 1, lines 7-11).

Regarding claim 47, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, and further in view of Dejneka, teaches the limitations of the base claim 41. Duggal does not teach that the device is configured as a laser generator. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured as a laser generator (column 1, lines 5,6). It would have been obvious to one of ordinary skill in the art at the time of the

invention to configure the device of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, and further in view of Dejneka, as a laser generator, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 32, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 28. Duggal does not teach positioning at least one mirror on each side of an optically pumped region of the optical cable, wherein one mirror is substantially opaque and the another mirror is at least partially reflective. Dejneka teaches a fiber laser (Figure 2, element 30) comprising one mirror (60,62) on each side of an optically pumped region (Figure 2 and column 6, lines 37-53), wherein one mirror is substantially opaque (highly reflective mirror 60, column 6, lines 41-43) and the another mirror is at least partially transparent (partially transmissive mirror 62, column 6, lines 44,45). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the positioning of a cavity comprising two mirrors, as taught by Dejneka, in the method of Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic. The motivation would have been to obtain a desired output signal (Desurvire, column 1, lines 7-11).

Allowable Subject Matter

Claims 8, 9, 42, and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 8, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal in view of Desurvire and further in view of Lester, either alone or in combination with the other prior art of record, does not disclose or render obvious the teaching that the efficiency of absorption of light in the core, the light produced by the light source, is a function of Pe/Pc (ratio of perimeter of envelope to perimeter of core).

Regarding claim 42, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, either alone or in combination with the other prior art of record, does not disclose or render obvious the teaching that the efficiency of absorption of light in the core, the light produced by the light source, is a function of Pe/Pc (ratio of perimeter of envelope to perimeter of core).

Regarding claim 9, Duggal in view of Desurvire and further in view of Lester teaches the limitations of the base claim 1. Duggal in view of Desurvire and further in view of Lester, either alone or in combination with the other prior art of record, does not

disclose or render obvious the teaching that the efficiency is controlled by choosing a desirable ratio of Pe/Pc.

Regarding claim 43, Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 37. Duggal in view of Desurvire and further in view of Lester, further in view of Inditsky and Bulovic, either alone or in combination with the other prior art of record, does not disclose or render obvious the teaching that the efficiency is controlled by choosing a desirable ratio of Pe/Pc.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB

Brian Healy
Primary Examiner